

Title	Honey, Where Are My Bees?		
Creator:	Burton, Lee Anne laburton@access.k12.wv.us		
Source:	TLI 2009 PBL Plans		
Project Idea:	The students will be investigating why the honey bee population has declined and how it impacts them and the people in their town. Students will work in collaborative groups of four to create a multimedia project. Each group will choose one of five creative presentations (Television News Program, Commercial (recorded on a Video DVD), Oral Report with Visuals (original artwork, digital images, collage, etc.), Dramatic Play with Costumes, Giant Book (with student created pictures and sentences). They will direct their presentations to their families, peers, and the principal. Local beekeepers will be invited as special guests.		
Entry Event:	A local beekeeper (apiarist) will visit the classroom wearing his white protective clothing. The apiarist will explain to the students that he or she isn't able to harvest as much honey this year because many of the honey bees are dying. The beekeeper will plead for the students to help find out why this is happening. The students will get to experience a real working honey bee colony that he brings to the school. It is encased in a screened observation box. He invites them on a field trip to experience his hives. He asks them if they'd like to try some of his delicious honey. The students will be told that he'll be back in a couple months. He will tell them that he can't wait to hear what they have to say. He might say, "If you'll do that for my friends and me, I'll bring you some of my delicious sweet honey and warm home-made biscuits!"		
Content Standards & Objectives:	Objectives Directly Taught or Learned Through Discovery	Identified Learning Target	Evidence of Success in Achieving Identified Learning Target
	SC.O.2.2.01 identify that plants and animals have different structures.	Students will identify animal and plant structures. Students will contrast animal structures to plant structures.	Flower Anatomy Fun Students will successfully operate a digital microscope in order to view the structure of a flower and draw and label its parts. Students will also explain pollination by correctly writing one paragraph.
	SC.O.2.2.02 identify the structures of living things including their systems, and explain their functions (e.g. wings for flying).	Students will identify structures of a honey bee and will also explain the functions of the bee body parts using complete sentences.	Digital Microscope Fun Students will successfully manipulate a digital microscope that is connected to a computer in order to get a magnified view of a bee. Students will draw and label the body parts of a honey bee and explain their functions (e.g. The wings are used for flying).
	SC.O.2.2.03 sequence pictures of events to illustrate the changes in the life cycle of plants and animals.	Students will identify and sequence the four stages of the honey bee life cycle after observing a working colony at a beekeeper's house and after using hand held lenses to view an observation hive. If an actual colony of bees is unavailable, the teacher may show a video of honey bees to the students. http://www.youtube.com/watch?v=IE-8QuBDkkw	Poster Rubric Students will successfully create a colorful poster that illustrates and explains the four stages of bee development and the structure of the comb.

		Students will write three sentences to describe what the queen, drones, and worker bees do.
SC.O.2.3.02 use models as representations of real things.	<p>Each student will draw a picture in their science journal to illustrate how they would construct a 3-D model of a honey bee. There should be a wide variety of scrap materials on the table to spark imagination.</p> <p>Students will collaborate in small groups to create a 3-D labeled model of the ten parts of a honey bee using a variety of scrap art materials.</p> <p>Students will compare/contrast a bee's body to their own by writing two paragraphs in their science journals.</p>	<p>The students will successfully record information in a Science Journal.</p> <p>Group members will successfully help each other check to see if all of the parts have been created and labeled using the 3-D Model of Honeybee Checklist.</p> <p>The students will successfully record information in a Science Journal. Tip: The teacher may choose to occasionally give feedback by writing comments or questions in the journal.</p>
SC.O.2.3.5 listen to and be tolerant of different viewpoints while working in collaborative groups.	Students will listen to their peer's ideas and participate in discussions while working in small groups.	<p>Students will successfully generate a Checklist Poster. They will brainstorm ways to be successful in a collaborative group during the beginning of the school year. All members of the class will sign their names on the poster and it will be displayed all year long (i.e. helping each other, using a nice tone of voice, listening to each other, everyone does their part, and all group members clean up).</p> <p>Tip: The teacher may choose to take pictures of the students demonstrating these behaviors to display around the Checklist Poster.</p>
RLA.O.2.3.3 access media tools to create an oral or visual presentation (e.g., desktop publishing, electronic resources, photos).	Students will demonstrate 21 st Century Critical Thinking skills by working in groups of four to create a multi-media oral or visual presentation on how the decline of honey bees is affecting them, their town, and local beekeepers. Students will also present ways to help the honey bee population.	<p>Presentation Rubric</p> <p>Each group signs up for one of the following choices to perform in front of their families, peers, principal and bee keepers:</p>

				1) Television News Program 2) Commercial recorded on DVD 3) Oral Report with Visuals 4) Dramatic Play with Costumes 5) Giant Book with pictures & sentences. (Each presentation must have written speaking parts for every member of the group).
21st Century Skills	Learning Skills & Technology Tools	Teaching Strategies Culminating Activity	Evidence of Success	
Information and Communication Skills:	21C.O.PK-2.1.LS3 - Student articulates thoughts and ideas, representative of real and imaginary experiences, clearly and effectively through oral, written or multimedia communication.	<p>The teacher will facilitate a KWL activity right after the entry event.</p> <p>Tip: The teacher may choose to spray a plastic tablecloth with a repositionable spray adhesive in order to create a reusable KWL chart. First, the students will be asked to write on small pieces of paper to articulate their thoughts on what they know and want to know about honey bees. Next, each student will read what they wrote on the paper and then stick their note on the sticky tablecloth. If a student thinks of what they want to know about honey bees later in the PBL process, they may stick another note on the chart for class inquiry.</p>	<p>Teacher Observation: A KWL Chart will be successfully used during the entire PBL process to guide student research.</p>	
Thinking and Reasoning Skills:	21C.O.PK-2.2.LS4 - Student engages in discovery, exploration and experimentation to reach unexpected answers. Student makes unusual associations and provides a variety of solutions to problems.	<p>The teacher will model thought provoking questioning techniques in a variety of ways in order to guide the students in researching honey bees. The teacher will facilitate students' research of books and websites as the students write a report.</p>	<p>Interview Guide Rubric Students will successfully conduct one interview aimed toward an expert who knows details about honeybees (beekeeper, college science professor, fruit tree farmer, DNR (Department of Natural Resources, etc.). Students write six questions to ask a bee expert in order to help solve the driving question. Students will neatly write the expert's answers with limited grammatical errors.</p> <p>Report Rubric Students will successfully research three books, two websites, and one interview to create a 2-3 page report that answers the driving question).</p>	

Personal and Workplace Skills:	21C.O.PK-2.3.LS3 - Student understands the defined learning goal and uses age-appropriate instructional rubrics and tools to assess his/her performance in meeting the goal within the timeline established by the teacher.	The teacher will place all of the assessments (rubrics) in a group folder on the PBL learning center table.	PBL Student Checklist A checklist of the assignments and rubric points will help students successfully stay on task and be aware of their progress.																																							
Performance Objectives:	Know: Knowledge of Honey bee How to Work Cooperatively with Others Critical Thinking Skills Technology Skills Presentation Skills Do: Use a Digital Microscope Draw, Label, and Describe the Functions of a Honey Bee's Body Create a Poster (life cycle, comb, workers) Write in a Journal Create a 3-D Labeled Model of a Honey Bee Compare/Contrast Your Body to a Bee's Body Parts Develop a Multi-media Group Presentation Write a 2-3 Page Report and Six Question Interview																																									
Driving Question:	How does the disappearance of honey bees affect me, my town, and local beekeepers, and what can I do to help the honey bees?																																									
Assessment Plan:	<table><tr><td>Major Group Products</td><td>Multimedia Presentation That Answers the Driving Question 3-D Honey Bee Labeled Model</td></tr><tr><td>Major Individual Projects</td><td>Interview with Six questions & Bee Expert's Answers Poster of four stages of a Honey Bee 2-3 Page Report That Answers the Driving Question</td></tr></table>			Major Group Products	Multimedia Presentation That Answers the Driving Question 3-D Honey Bee Labeled Model	Major Individual Projects	Interview with Six questions & Bee Expert's Answers Poster of four stages of a Honey Bee 2-3 Page Report That Answers the Driving Question																																			
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	Journal Writing/Learning Log Science Journal	X	Other PBL Parent Newsletter	X																																				
Map The Product:	<p>A multi-media presentation will be created by students to organize their research about why honey bees are dying, how it affects the students and beekeepers, and how the bees can be helped. The students will be given time to research information by interviewing bee experts, reading books, and using search engines. The students will present their findings through one of the following group presentations: 1) Television News Program; 2) Commercial that is recorded on a Video DVD; 3) Oral Report with Visuals that includes original artwork, digital images, collage, etc.; 4) Dramatic Play with Costumes; or 5) Giant Book with student created pictures and sentences. The productions will be presented in front of the school, parents, and beekeepers.</p> <p>Product: Final Presentation</p> <table><tr><th>Knowledge and Skills Needed</th><th>Already Have Learned</th><th>Taught Before the Project</th><th>Taught During the Project</th></tr><tr><td>1. Collaboration/communication</td><td></td><td>X</td><td>X</td></tr><tr><td>2. Critical thinking/problem solving</td><td></td><td>X</td><td>X</td></tr><tr><td>3. Research print, the Internet, books, and interview a bee expert</td><td></td><td>X</td><td>X</td></tr><tr><td>4. Analyze the honey bee: pollination, life cycle, working colony, endangerment, global necessity to sustain life</td><td></td><td></td><td>X</td></tr><tr><td>5. Write a report in one's own words</td><td></td><td>X</td><td>X</td></tr><tr><td>6. Create a 3-D model</td><td></td><td></td><td>X</td></tr><tr><td>7. Design graphic organizers/posters</td><td></td><td>X</td><td>X</td></tr><tr><td>8. Presentation skills/use multimedia technology</td><td></td><td>X</td><td>X</td></tr></table>				Knowledge and Skills Needed	Already Have Learned	Taught Before the Project	Taught During the Project	1. Collaboration/communication		X	X	2. Critical thinking/problem solving		X	X	3. Research print, the Internet, books, and interview a bee expert		X	X	4. Analyze the honey bee: pollination, life cycle, working colony, endangerment, global necessity to sustain life			X	5. Write a report in one's own words		X	X	6. Create a 3-D model			X	7. Design graphic organizers/posters		X	X	8. Presentation skills/use multimedia technology		X	X
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Resources:	<p>School-based Individuals: Media Specialist Science Teachers</p> <p>Technology: Laptop Computer with a Word Processing Program Internet Research Printer Projector Camcorder Computer Speakers Digital Microscope</p> <p>Websites: http://www.honey.com/downloads/HoneyFilesWeb.pdf From this website, you can download a wonderful, free, 91 page teaching guide called "The Honey Files: A Bee's Life." http://www.gpnc.org/honeybee.htm http://www.bees-online.com/Beesite.htm These two websites provide comprehensive fascinating facts about honey bees. http://www.youtube.com/watch?v=IE-8QuBDkkw This website is the movie for the life of a bee. It is a youtube video and must be downloaded from home. http://thedailygreen.com/going=green/2836 Five Ways Kids Can "Save Our Bees"</p> <p>Community: Beekeepers (Apiculturists) Department of Natural Resources</p>																																							

County Farm Bureau (i.e. local farmers who grow fruit trees)
Agricultural University
County Extension Service

Materials:

[KWL Chart](#) (See explanation above under 21st Century Skills)
Posters/Art Supplies/Scrap Materials
Science Journal/Writing Paper
Expired Honey Bees/Hand Lens/Plastic Tweezers
Observation Hive or Video of a Colony of Honey Bees
Vocabulary Words on a Wall

Children's Books:

Cole, Joanna. *The Magic School Bus Inside a Beehive*. New York: Scholastic Inc., 1996.
Crew, Sabrina. *The Bee*. Austin: Steck-Vaughn, 1997.
Gibbons, Gail. *The Honey Makers*. New York: Scholastic Inc., 1997.
Heiligman, Deborah. *Honey Bees*. Washington, D.C.: National Geographic Society, 2002.
Kalman, Bobbie. *Hooray for Beekeeping*. New York: Crabtree Publishing Co., 1998.

Manage the Process:

Notes on the PBL Experience:

The teacher will introduce the PBL with an entry event for the students followed by a [PBL Parent Newsletter](#). The [PBL Student Checklist](#) will be given to students at that time and will help them keep track of their progress. The anticipated time for completion of this PBL will be approximately three months.

Before putting students into groups of four, the teacher will take into account the students reading ability, personality, and learning style (hands-on, auditory, visual, etc.). Students are assigned to groups to provide the best mixture of abilities. Team leaders are chosen based on their ability to take into consideration the feelings of each group member. Various group roles are possible including a materials manager, a writer, or an artist.

First, the teacher will explain the five choices for the MultiMedia Projects to the students: 1) Television News Program; 2) Commercial on DVD; 3) Oral Report with Visuals; 4) Dramatic Play with Costumes; or 5) Giant book with Pictures and Sentences. Groups will be given a few minutes to discuss which project they want to complete.

Each group can be assigned a basket and folder of a specific color to distinguish their materials. The PBL center consists of a bulletin board with vocabulary words and a display table for the project materials, rubrics, group baskets and folders.

The teacher's role will be to meet with each group for 5 – 10 minutes per class session in order to guide students to stay on task and make sure that a script is written that includes every group member. Emphasis will be placed on equal student participation in each collaborative group. The teacher will use scaffolding. This is an instructional technique whereby the teacher models the desired learning task or appropriate thinking and then gradually shifts responsibilities to the students.

If extra time is needed to develop and practice the group presentations, students could use their library time in the media center. It may be beneficial if the technology or media specialist places shortcuts for websites on the desktop for the students. It may take approximately eight class periods for students to develop their scripts or projects and eight class periods to practice their presentations. This could be accomplished during science class, or special times such as media. Performances could be recorded or performed live. Some groups may choose to develop their own idea for a project that meets their strengths or learning styles. The following is a list of the student directed learning that will take place for the entire honey bee PBL.

Step 1:

Plan the entry event: To entice the students to become excited about this new learning experience, a local beekeeper will enter the classroom carrying equipment. The beekeeper might say, "Boys and girls I've noticed that some of my honey bees are dying and I don't know why. This means I won't have very much honey this year. How many of you like honey? I really need your help to find out what is happening. It is

a mystery to me. I really care about my honey bees just like you care about your pets. I would like to come back in a couple months so that you can tell me why some of them are dying and how that affects the people in our town. I would also like for you to research ways that you can help the honey bees.

Raise your hand if you will help me. Great! I also want to invite you to take a field trip to see my bee hives. They are amazing to watch. I'll see you very soon! I'm counting on you!" The beekeeper will spend the rest of the day in the classroom explaining basic bee biology. The students will have the opportunity to ask many questions and have hands-on experience using the beekeeping equipment and viewing the observation hive. Send home the [PBL Parent Newsletter](#). The [PBL Student Checklist](#) will be given to students at this time and will help them keep track of their progress.

Step 2:

The students will brainstorm a class list of ways to work successfully in collaborative groups. The teacher will write the list on a poster and take photographs of the students illustrating those qualities to display around the poster. The students will sign their names at the bottom of the poster.

Step 3:

[KWL Chart](#): The students will write on small pieces of paper what they know (K) about honey bees, and what they want (W) to know about honey bees and place their papers on the chart as they read them aloud to their classmates (see information under 2nd Century Skills above). The teacher will refer to the chart during the entire PBL process to guide student inquiry. At the end of the honey bee PBL, the students will write under the L what they have learned about honey bees.

Step 4:

The students will watch a magnified video of a honey bee colony or take a field trip to see a local beekeeper. This website is the movie for the life of a bee and it is a youtube video and must be downloaded from home.

<http://www.youtube.com/watch?v=IE-8QuBDkkw>

Step 5:

[Poster Rubric](#): The students will create a poster that sequences the four stages of the honey bee life cycle, and write three sentences about the queen, drones, and worker bees.

Step 6:

[Flower Anatomy Fun](#): The students will view the structure of a flower using a digital microscope and draw and label the flower's parts. Students will also read *The Honey Makers* and write one paragraph that explains pollination and the relationships necessary with bees for pollination to occur.

Step 7:

[Digital Microscope Fun](#): The students will view an expired honey bee under a digital microscope, draw and label the bee's anatomy, and write sentences to explain the functions of some of the bee's body parts. Identify that plants and animals have different structures," requires students to contrast structures. At this part of the lesson, students will have examined plant and animal students. It would be a good time to talk about those differences (similarities could be discussed also.) In the first grade, students would have learned that most things need water, food, light, and air. Build upon that idea here. What structures do the plants and animals have that allow them to get the things they need? How are those parts different? How are the needs of plants and animal different? This can be done as a "guided inquiry" kind of discussion. It does not require an additional composition or project to be completed by the students.

Step 8:

The teacher will place a variety of scrap materials and art supplies on a table to spark imagination for constructing bees.

[Science Journal](#): First, the students will draw designs of their group's 3-D model of a honey bee and discuss types of materials that could be used for the bee body parts.

[3-D Model of a Honeybee Checklist](#): Second, the students will collaborate in small groups to construct a 3-D labeled model of a honeybee using scrap materials.

Step 9:

[Science Journal](#): First, the students will draw pictures to illustrate the likenesses and differences between their bodies and a honeybee's body. Second, the students will write two paragraphs that compare and contrast their

bodies to a bee's body.

Step 10:

Interview Guide Rubric:

Students will interview a honey bee expert (i.e. beekeeper, Department of Natural Resources, University Biology/Science Professor, or a professional connected with the food/plant industry, etc.) by writing six in-depth questions that will help the student research why honey bees are dying and how the bees can be helped. Before the students talk to a bee expert, the teacher will model proper interview etiquette. Then, the students will practice interviewing each other before contacting a honey bee expert.

Step 11:

Report Rubric: In addition to the information gained from interviewing a bee expert, students will complete more research by reading honey bee books and Internet articles. Books have been recommended in the Materials list of the PBL. Then, the students will answer the driving question by writing a two to three page report. The teacher will model writing the outlines, paraphrasing, report organization, proofreading, etc. to ensure students understand their tasks. The teacher will provide the students approximately three weeks for researching the driving question, discussing their findings, and creating a written report.

Step 12:

Presentation Rubric: The students will choose one of the following multi-media group presentations: 1) Television News Program; 2) Commercial on DVD; 3) Oral Report with Visuals; 4) Dramatic Play with Costumes; or 5) Giant book with Pictures and Sentences. The presentations will give the students an opportunity to present all of their honey bee knowledge gained from their research. This will be a creative way for students to answer the driving question of why honey bees are dying, how it affects the community, and how bees can be helped.

Project Evaluation:

The teacher will observe the notes that each student writes in their **Science Journal** and the level of group participation. Student grades will come from the rubric scores, discussions, and informal observations. In addition, the teacher, the principal, and a guest beekeeper will review each group presentation and provide feedback. Reviews consist of three positive comments and one suggestion for improvement

Reflection: After all presentations are given, the teacher and the students will have a class discussion to reflect upon all of the learning that has taken place the last three months. Attention will also be directed to the **KWL Chart** on the wall. The students will write on small pieces of paper what they have learned from the PBL experience and stick their papers on the chart under the L.

Science Journal: First, the students will be asked to write three things that they learned from researching honey bees by writing their thoughts in the journal. Second, students will write two ways that they could improve their research/presentation skills. Third, students will write one suggestion for a way to make this project based learning experience even more fun for next year's class.

**Resource Files
Uploaded**

Resource Files

- UP3513WS2.doc
(<http://wveis.k12.wv.us/Teach21/CSO/Upload/UP3513WS2.doc>)
- UP3513WS3.doc
(<http://wveis.k12.wv.us/Teach21/CSO/Upload/UP3513WS3.doc>)
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